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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/612,330	07/02/2003	Esin Cubukcu	21980-04012	3819

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EXAMINER	
ALEJANDRO, RAYMOND	
ART UNIT	PAPER NUMBER
1745	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/09/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/612,330	CUBUKCU ET AL.	
	Examiner	Art Unit	
	Raymond Alejandro	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 June 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 4-31* is/are pending in the application.

4a) Of the above claim(s) *1* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *4-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 May 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *3 IDS (See item 3)*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group II (claims 4-33) in the reply filed on 06/26/06 is acknowledged. The traversal is on the ground(s) that "*Claim 4 merely refers to "applying" a ceramic material, which is generic to all of the particular coating techniques cited by the examiner. Thus, there is no basis for asserting that claims 1 and 4 are distinct from one another*". This is not found persuasive because the restriction requirement dated 06/04/06 set out two separate and distinct inventions identified as Group I (claim 1) directed to a ceramic composite device classed in 429/30 and Group II (claims 4-33) directed to methods for manufacturing a ceramic composite power or oxygen generating device classed in class 427/115 or 29/623.5. In establishing the burden, the examiner relies first on the definition of distinct or independent inventions by virtue of the relationship between Group I and Group II, which were identified to be related as process of making and product made and are distinct because as set forth in the restriction requirement the ceramic composite electrolytic device can be made by different process such as dipping, spraying, spinning, silk screening and/or painting; and second by the guidelines established in ***MPEP 808.02 [R-3] Establishing Burden*** setting forth that serious burden is present if at least one of following criteria is met: A) each invention has attained recognition in the art as a separate subject for inventive effort, and also a separate field of search (***Separate classification thereof***); and/or B) it is necessary to search for one of the inventions in a manner that is not likely to result in finding art pertinent to the other invention(s) (e.g., searching different classes /subclasses or electronic resources, or employing different search queries, a different field of search is shown, even though the two are classified together (*A*

different field of search); and/or C) each invention can be shown to have formed a separate subject for inventive effort when the examiner can show a recognition of separate inventive effort by inventors, this can be established by at least showing a separate field of search (***A separate status in the art when they are classifiable together***). In the instant case, Group I and II meet at least criteria A) and B) above for the reasons expressed supra. Accordingly, serious burden would be raised if the search of both different groups was made as required for the separate and distinct inventions. Furthermore, applicant's contention that the term "applying" is generic to all of the particular coating techniques is further evidence that the invention of Group I can be made by materially different processes as required by 35 USC 121 for inventions related as process of making and produce made. Note that applicant's contention is not based upon a statement that the invention of Group I can only be made with a specific method; to the contrary, applicant recognizes the existence of different techniques for making Group I invention. The requirement is still deemed proper and is therefore made **FINAL**.

Priority

2. This application is a division of Application No. 09/592190, filed 06/12/00 which is a division of 09/020204 filed 02/06/98.

Information Disclosure Statement

3. The information disclosure statements (IDS) submitted on 10/14/03, 09/20/04 and 05/16/05 were considered by the examiner.

Oath/Declaration

4. Refer to Decision on Petition under 37 C.F.R. 1.47(a) dated 03/12/04 for more information concerning a non-signing inventor. The petition was granted.

5. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

- It does not state that the person making the oath or declaration believes the named inventor or inventors to be the original inventor or inventors of the subject matter which is claimed and for which a patent is sought.

Drawings

6. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: 54, 58, 63. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

7. The drawings are objected to under 37 CFR 1.83(a) because they fail to show details of Figure 13 as described in the specification on page 13 (lines 1 and 12) (*It is noted that there is no*

Figure 13). Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

8. The preliminary amendment filed 07/02/03 does not introduce new matter into the disclosure.

9. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

10. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and *generally limited to a single paragraph* on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

11. The disclosure is objected to because of the following informalities: the status of the parent application (whether abandoned or patented and its patent #) under 35 USC 120 must be updated. Appropriate correction is required.

12. The disclosure is objected to because of the following informalities: there is no specific description of Figures 13A, 13B, 13C and 26G in Brief Description of Drawings.

Claim Rejections - 35 USC § 112

13. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

14. Claims 4-31 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Applicant's cooperation to address lack of antecedent basis in most of the present claims is requested. If one has been left unidentified, applicant is kindly requested to correct it.

15. The language "at least a portion of said portion" in claim 4 (line 13) is of uncertain meaning, thereby rendering the scope of the claim vague. The language "a portion of said portion" is not understood by the examiner.

16. Claim 4 recites the limitation "said ceramic composite metal member" in lines 22-23. There is insufficient antecedent basis for this limitation in the claim. It is noted that claim 4 contains an earlier recitation of "ceramic composite member".

17. Claim 5 recites the limitation "the hole pattern" in lines 2-3. There is insufficient antecedent basis for this limitation in the claim.

18. Claim 6 recites the limitation "a chamber" in line 1. There is insufficient antecedent basis for this limitation in the claim. Note that claim 1 now contains an earlier of a gas tight chamber. It is immediately unclear whether the present claims intend to recite two different chambers or same chamber.

19. Claim 7 recites the limitation "said ceramic composite body" in line 2. There is insufficient antecedent basis for this limitation in the claim. It is noted that claim 4 contains an earlier recitation of "ceramic composite member".

20. Claim 8 recites the limitation "the ceramic metal composite" in lines 3-4. There is insufficient antecedent basis for this limitation in the claim. It is noted that claim 4 contains an earlier recitation of "ceramic composite member".

21. Claim 17 recites the limitation "said plurality of cells" in line 5. There is insufficient antecedent basis for this limitation in the claim.

22. Claim 20 recites the limitation "the ceramic metal composite" in line 3. There is insufficient antecedent basis for this limitation in the claim.

23. Claim 20 recites the limitation "the electrode" in line 3. There is insufficient antecedent basis for this limitation in the claim.

24. Claim 21 recites the limitation "said ceramic composite body member" in line 3. There is insufficient antecedent basis for this limitation in the claim. It is noted that claim 4 contains an earlier recitation of "ceramic composite member".

25. Claim 22 recites the limitation "the electrocatalyst layer" in line 6. There is insufficient antecedent basis for this limitation in the claim.

26. Claim 22 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: the claim recites "electrode layer..." and "the electrode layers", in the specific context of the claimed invention it is not understood how a third electrode layer, if intended, is incorporated within the oxygen or power generating device.

27. Claim 23 recites the limitations "said first layer" and "said second layer" in lines 11-12, respectively. There is insufficient antecedent basis for this limitation in the claim.

28. Claim 23 recites the limitations "said bipolar metal member" in line 16. There is insufficient antecedent basis for this limitation in the claim. Claim 23 is an independent claim.

29. Claim 27 recites the limitations "the electrode layer" in line 3. There is insufficient antecedent basis for this limitation in the claim.

30. Claim 29 recites the limitations "the electrode layer" in line 8. There is insufficient antecedent basis for this limitation in the claim.

31. Claim 31 recites the limitation "said plurality of cells" in line 4. There is insufficient antecedent basis for this limitation in the claim.

To the extent the present claims were understood by the examiner (refer to rejections under Section 112 above), please note the following art rejection:

Claim Rejections - 35 USC § 102

32. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

33. Claims 4-21 and 23-31 are rejected under 35 U.S.C. 102(e) as being anticipated by Cubukcu et al 6132573.

The applied reference has common inventors with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

The present application is directed to a method for manufacturing a ceramic composite oxygen or power generation cell wherein the disclosed inventive concept comprises the specific steps being carried to form the cell.

As to claim 4:

Cubukcu et al disclose ceramic composite electrolytic devices and method for manufacture thereof (TITLE/ABSTRACT), the device is an oxygen generating device (COL 14,

line 65). Cubukcu et al teach placing a ceramic material 60 on a hole pattern section 80 of an alloy (COL 8, lines 34-65/ COL 13, lines 25-45/COL 10, lines 5-25/COL 9, lines 3-10) and firing them to form a ceramic composite material (COL 8, lines 34-65/ COL 13, lines 25-45/ COL 10, lines 5-25/COL 10, lines 44/COL 6, lines 37-55). Then, follows application of electrode layers (*the electrically conductive material*) including firing the whole composite material (COL 13, lines 40-65); thereafter, a bipolar foil 50 contacting/engaging the ceramic composite is provided (COL 14, lines 34-40/COL 6, lines 20-55/ COL 7, lines 30-37/ COL 9, lines 35-45/COL 5, lines 29-40) and an air tight seal (chamber) is formed (COL 10, lines 36-40/COL 14, lines 44-50).

As to claim 5:

Specifically, the application of the ceramic material by dipping on a hole pattern of a metal member is disclosed (COL 10, lines 5 & 20-23/ COL 12, lines 42-56/COL 8, lines 34-65/ COL 13, lines 25-45/COL 10, lines 5-25/COL 9, lines 3-10).

As to claim 6:

As disclosed by Cubukcu et al, an air tight seal (chamber) is formed between the ceramic material and the bipolar metal (COL 10, lines 36-40/COL 14, lines 44-50).

As to claim 7:

The formation of an oxygen egress tube 67 is disclosed (COL 15, lines 55-65/COL 6, lines 10-15) as well as a shell outlet 136 connected to the manifold (COL 16, lines 1-15); and gas out passageways (COL 4, lines 20-27). *Thus, an output for exhausting gas is disclosed.*

As to claims 8 and 20:

The specific application of a catalyst material is disclosed (COL 6, lines 56-65)

As to claim 9:

Electrical contact layers 53 on the dimples of bipolar foil 50 are also disclosed (COL 15, lines 13-17). *These layers serve as the current collectors.*

As to claim 10:

A seal coat is disclosed (COL 12, lines 5-10) as well as an air tight seal (chamber) is formed between the ceramic material and the bipolar metal (COL 10, lines 36-40/COL 14, lines 44-50) and a base coat slip (COL 13, lines 25-27).

As to claim 11:

Metallic cell frames are also taught (COL 14, lines 34-40 & COL 14, line 65 to COL 15, line 10/COL 7, lines 6-15).

As to claim 12:

Disclosed is that weld must provide a hermetic and permanent gas tight seal (COL 14, lines 60-65). *Thus, the welding step is disclosed.*

As to claims 13-14:

Dimple patterns by embossing are formed on the metallic bipolar foil (COL 5, lines 39-45/COL 5, lines 57-59/COL 4, lines 53-60). *They represent 3-D structures.*

As to claim 15:

A photolithographic member is disclosed as well as the formation of the hole pattern as results of photolithographic techniques (COL 9, lines 4-10/ COL 8, lines 35-62/COL 4, lines 59-61/COL 6, lines 1-2/COL 7, lines 24-26). Thus, the technique of photolithography is employed.

As to claims 16 and 30:

A seal coat is disclosed (COL 12, lines 5-10) as well as an air tight seal (chamber) is formed between the ceramic material and the bipolar metal (COL 10, lines 36-40/COL 14, lines 44-50) and a base coat slip (COL 13, lines 25-27).

Metallic cell frames are also taught (COL 14, lines 34-40 & COL 14, line 65 to COL 15, line 10/COL 7, lines 6-15).

Dimple patterns by embossing are formed on the metallic bipolar foil (COL 5, lines 39-45/COL 5, lines 57-59/COL 4, lines 53-60). *They represent 3-D structures.*

Thickness of the metal member is 0.002 or 0.004 inches (COL 8, lines 41-43).

As to claims 17 and 31:

The formation of an oxygen egress tube 67 is disclosed (COL 15, lines 55-65/COL 6, lines 10-15) as well as a shell outlet 136 connected to the manifold (COL 16, lines 1-15); and gas out passageways (COL 4, lines 20-27). *Thus, dn output for exhausting gas is disclosed.* Additionally, passages 42 for providing air into the device 10 and an oxygen output 44 for supplying oxygen from the device are disclosed (COL 4, lines 29-32).

Additionally, a resistance heat element 14 and an fan 30 are disclosed (COL 4, lines 20-30). Reference numeral 12b are arms (COL 15, lines 55-56).

As to claim 18:

Thickness of the metal member is 0.002 or 0.004 inches (COL 8, lines 41-43). The hole pattern has the shape of an hexagonal close pack cell (Col 4, lines 61-64/Col 8, lines 43-45).

As to claim 19:

Reference numeral 12b are arms to ensure oxygen egress (COL 15, lines 55-56/COL 6, lines 14-18). The formation of an oxygen egress tube 67 is disclosed (COL 15, lines 55-65/COL

6, lines 10-15) as well as a shell outlet 136 connected to the manifold (COL 16, lines 1-15); and gas out passageways (COL 4, lines 20-27). *Thus, an output for exhausting gas is disclosed.* Additionally, passages 42 for providing air into the device 10 and an oxygen output 44 for supplying oxygen from the device are disclosed (COL 4, lines 29-32).

As to claim 21:

As best understood, it is contended that when the claimed device is used as an oxygen generating device, no fuel is required to be stored. Fuel is required when the device is used as a power generating device. Thus, the oxygen generation device of Cubukcu et al meets such a requirement.

As to claim 22:

Silver is used as part of the anode and cathode (COL 13, lines 44-47). Layers of metals such as platinum or palladium or iridium or noble metal such as gold are used in combination with Ag-layers (COL 6, lines 56-60/COL 6, lines 22-27). Disclosed is the use of bismuth barium oxide solid electrolyte (COL 13, lines 55-58).

As to claims 23 and 27:

Cubukcu et al disclose assembly of the oxygen generating device (COL 14, lines 65-67) providing at least a stack comprising two cells (COL 14, line 65 to COL 15, line 17) including respective anode sides and cathode sides (COL 15, lines 1-5) and respective electrical contact layers 53 (*the current collectors*) on the dimples of the bipolar foil 50, and the electrode layer or cermet 112 on both sides of the ceramic composite material. The cathode supported on member 60 contacts the contact layers 53 of the bipolar foil 50 of an adjacent cell 12 (COL 15, lines 10-35). Components are interconnected to form a gas-tight seal (COL 14, lines 44-48).

As to claims 24-26:

A stack of cells is provided within a thermal shell 24 (COL 16, lines 37-57/ COL 4, lines 22-25). In addition to that, it is contended that the combination of insulating material 28, heat element 14 including two heating plates 62" (COL 16, lines 38-55); stack duct member 140, exhaust duct 142 (COL 16, lines 58-65); and a layer of sealing material 168 (COL 17, lines 33-37) conform to a 3 layer structure providing a shell feature.

As to claim 28:

Resistance heat elements 14 are disclosed (COL 4, lines 20-30) and heat element 14 includes two heating plates 62" wherein one plate 62a" is engaged on top of the cell stack, the other is on the bottom (COL 16, lines 38-55).

As to claim 29:

A stack of cells is provided within a thermal shell 24 (COL 16, lines 37-57/ COL 4, lines 22-25). Resistance heat elements 14 are disclosed (COL 4, lines 20-30) and heat element 14 includes two heating plates 62" wherein one plate 62a" is engaged on top of the cell stack, the other is on the bottom (COL 16, lines 38-55). Respective electrical contact layers 53 (*the current collectors*) on the dimples of the bipolar foil 50 are disclosed (COL 15, lines 10-35).

Therefore, the present claims are anticipated.

Claim Rejections - 35 USC § 103

34. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

35. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

36. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cubukcu et al 6132573 as applied to claim 6 above, and further in view of LaConti et al 4528083.

Cubukcu et al is applied, argued and incorporated herein for the reasons expressed above.

Additionally, Cubukcu et al teaches that silver is used as part of the anode and cathode (COL 13, lines 44-47). Layers of metals such as platinum or palladium or iridium or noble metal such as gold are used in combination with Ag-layers (COL 6, lines 56-60/COL 6, lines 22-27). Disclosed is the use of bismuth barium oxide solid electrolyte (COL 13, lines 55-58).

However, the preceding prior art reference does not expressly disclose the specific transition metal oxides (i.e. ruthenium oxide or iridium oxide or mixtures) as part of the electro-catalyst.

LaConti et al discloses that it is well-known to use platinum-iridium oxide catalyst in electrodes of electrochemical cells and methods for gas generation utilizing catalyst and electrodes (COL 1, lines 36-50) because it provides improved performance and efficiency (COL 1, lines 36-50).

Compounding the aforementioned teachings, it would have been obvious to a person possessing a level of ordinary skill in the pertinent art at the time the invention was made to use the specific transition metal oxides (i.e. ruthenium oxide or iridium oxide or mixtures) as part of the electro-catalyst of Cubukcu et al as taught by LaConti et al as LaConti et al teaches that it is well-known to use platinum-iridium oxide catalyst in electrodes of electrochemical cells and methods for gas generation utilizing catalyst and electrodes because it provides improved performance and efficiency.

37. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cubukcu et al 6132573 as applied to claim 6 above, and further in view of Janssen et al 4900406.

Cubukcu et al is applied, argued and incorporated herein for the reasons expressed above.

Additionally, Cubukcu et al teaches that silver is used as part of the anode and cathode (COL 13, lines 44-47). Layers of metals such as platinum or palladium or iridium or noble metal such as gold are used in combination with Ag-layers (COL 6, lines 56-60/COL 6, lines 22-27). Disclosed is the use of bismuth barium oxide solid electrolyte (COL 13, lines 55-58).

However, the preceding prior art reference does not expressly disclose the specific transition metal oxides (i.e. ruthenium oxide or iridium oxide or mixtures) as part of the electro-catalyst.

Janssen et al makes known that electrochemical cells such as power generating fuel cells can use as a catalyst an oxide form of noble metal such as ruthenium oxide (COL 3, lines 52-65).

Compounding the aforementioned teachings, it would have been obvious to a person possessing a level of ordinary skill in the pertinent art at the time the invention was made to use the specific transition metal oxides (i.e. ruthenium oxide or iridium oxide or mixtures) as part of the electro-catalyst of Cubukcu et al as taught by Janssen et al as Janssen et al teaches that such a specific catalyst material enhances catalytic activity of the electrode and improve fuel cell characteristics such as current density and electrical conductivity.

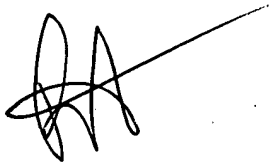
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Raymond Alejandro whose telephone number is (571) 272-1282. The examiner can normally be reached on Monday-Thursday (8:00 am - 6:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Raymond Alejandro
Primary Examiner
Art Unit 1745



RAYMOND ALEJANDRO
PRIMARY EXAMINER